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**Two crabs, *Xandaros sternbergi* (Rathbun 1926) n. gen., and *Icriocarcinus xestos* n. gen., n. sp., from the late Cretaceous of San Diego County, California, USA, and Baja California Norte, Mexico**

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*Abstract.* Two collections containing 14 specimens of late Cretaceous crabs from Carlsbad, San Diego County, California, and Punta San Jose, Baja California Norte, Mexico, yield new data on Pacific Slope Cretaceous decapods. Three specimens of Cretaceous decapods from Punta San Jose are preserved in calcareous concretions from the Rosario Formation and eleven specimens associated with a diverse molluscan fauna from Carlsbad are preserved in sandy claystone of the Point Loma Formation. Three crabs from Punta San Jose and six specimens from Carlsbad are assigned to *Xandaros sternbergi* (Rathbun 1926), n. gen. Five specimens from Carlsbad are assigned to *Icriocarcinus xestos*, n. gen., n. sp. *Xandaros sternbergi* is a xanthid crab with a massive body and massive, spatulate chelae. *Icriocarcinus xestos* is a carcineretid crab with a wide, flattened carapace and heterochelous, keeled claws. One specimen of *I. xestos* is preserved in a simple oblique burrow.

INTRODUCTION

*Previous work.*—The Cretaceous record of Pacific Slope crabs is sparse (Bishop 1986*b*) consisting of rare specimens of six described species. Woodward (1896) described the crabs *Plagiolophus vancouverensis*, *Homolopsis richardsoni*, and *Palaeocorystes harveyi* from British Columbia. Rathbun (1908) described *Archaeopus antennatus* from San Mateo County, California, and later (Rathbun 1926) described a unique cheliped from, “5 miles north of Carlsbad Station, Santa Fe Railway, San Diego County,” as *Zanthopsis sternbergi* with the remark: “While this cheliped has the general form of a *Zanthopsis*, it differs from all other species of which the cheliped is known by the greater number and different disposition of tubercles.” In 1929, Glaessner reassigned *Plagiolophus vancouverensis* to *Archaeopus* and *Palaeocorystes harveyi* to *Notopocorystes*.

Richards (1975) described *Longusorbis cuniculosus* from the Spray Formation (late Campanian or early Maastrichtian) on Vancouver Island. The exquisite preservation of 83 specimens was ascribed to their being buried and fossilized in their burrows. One nearly complete burrow is figured (Richards 1975, fig. 6) and is differentiated from the substrate in which it was constructed by the texture and color of the burrow fill.

Feldmann and McPherson (1980) reviewed the fossil decapod crustaceans of Canada attempting to bring that scattered literature together into a revisionary paper. This attempt was successfully completed for the lobsters but was only partly complete for the crabs.

Bishop (1983) erected *Zygastrocarcinus* and reassigned *Homolopsis richardsoni* to *Zygastrocarcinus*. Sundberg and Riney (1984) published a preliminary report on the invertebrate fauna from the Point Loma Formation collected near Carlsbad, California, including an illustration of an indeterminate decapod (Sundberg and Riney 1984:105, fig. 3.9).

*The collections.*—A collection of fossil crabs was made by Mr. Edward Hennessey

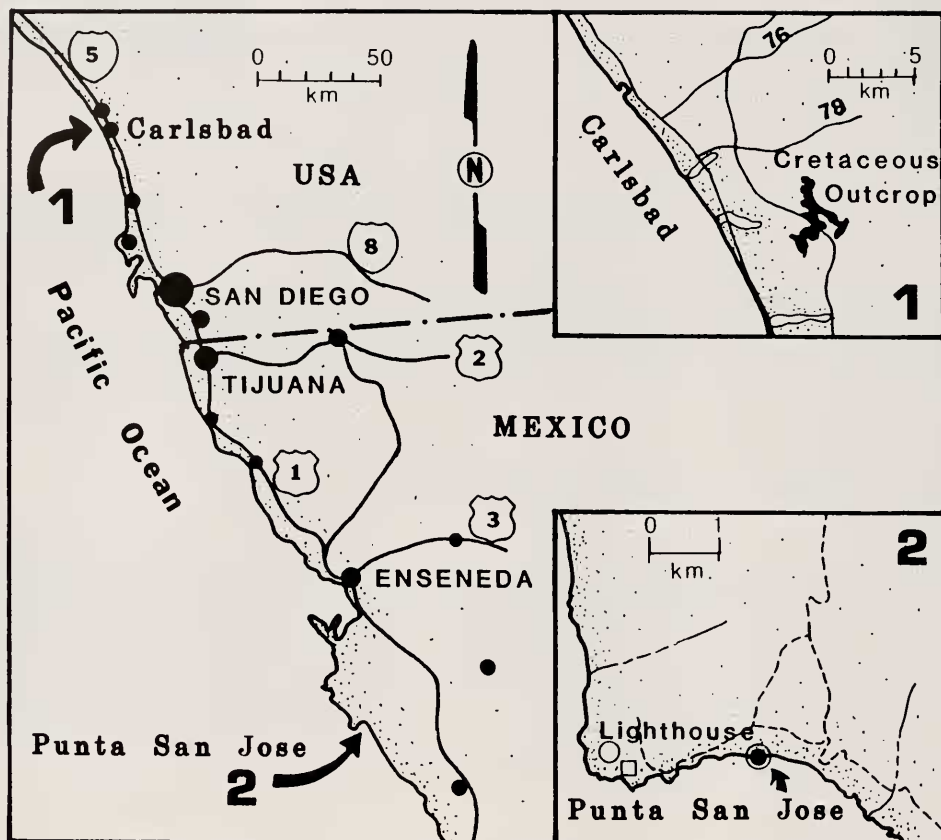


FIGURE 1. Geographic location of collection sites near Carlsbad (1), and Punta San Jose, Baja California Norte (2).

of Long Beach, California, from the upper Cretaceous Rosario Formation as exposed in the sea cliffs at Punta San Jose, Baja California Norte (Figure 1.2). Three specimens in this collection are preserved in ovoid, calcareous concretions with portions of the crabs exposed at the concretion surfaces. Varying portions of the carapace are exposed giving rise to a "pseudomorphology" that could easily confuse the casual observer and lead to false conclusions about its actual morphology.

A second collection consists of 11 specimens collected by Bradford Riney and Thomas Deméré, Department of Paleontology, San Diego Natural History Museum from the Point Loma Formation, Carlsbad, California (SDSNH Loc. 3162, Figure 1.1). The Cretaceous section here is considered to be late Campanian or early Maastrichtian in age (Sundberg and Riney 1984). Specimens of two species are preserved as clay-filled exoskeletons or as exfoliated clay steinkerns. The specimens received for study had been prepared from the surrounding claystone with a pin vise. Preparation with a needle and pin vise in Statesboro further freed several specimens from the enclosing matrix. One specimen was preserved *in situ* in its shell-filled burrow. Sundberg and Riney (1984) considered the Carlsbad invertebrate fauna to have inhabited a firm mud bottom below wave base. This diverse fauna is characterized by *Indogrammatodon?* sp., *Crassatella* sp., *Limopsis* sp., Tellinidae indet., *Calva* sp., *Syncyclonema* sp., *Dentalium* sp., *Anchura* sp., *Gyrodes* sp., and *Volutoderma* sp. The six crabs are preserved in claystone, as articulated specimens commonly with the exoskeleton intact. The preservation is so fine that setal pits are preserved, as are patterns attributable to color markings.

Abbreviations used in the text include SDSNH, San Diego Natural History Museum, Department of Paleontology; EH, Edward Hennessey, private collection; and USNM, United States National Museum, Smithsonian Institution.

## SYSTEMATIC PALEONTOLOGY

Order Decapoda Latreille, 1803  
 Infraorder Brachyura Latreille, 1803  
 Section Branchyryncha Borradaile, 1907  
 Superfamily Portunoidea Rafinesque, 1815  
 Family Carcineretidae Bureslen, 1930  
*Icriocarcinus*, new genus

*Type species.*—*Icriocarcinus xestos*, new species.

*Diagnosis.*—Carapace pentagonal, twice as wide as long, well differentiated by grooves into smooth, plateau-like areolations. Rostrum very narrow, downturned, *not* grooved, rounded at tip. Anterolateral margin with two small orbital spines plus large spine at widest point  $\frac{1}{3}$  distance from front. Orbits large, eyestalk long and slender. Posterolateral margins straight and steep. Posterior margin slightly concave. Areolations on carapace raised into plateaus, small transverse ridge on protogastric region even with distal ends of cervical groove. Anterior portion of epibranchial lobe developed as a narrow, distal ridge behind cervical groove. Cardiac region bilobed, decreasing in relief posteriorly until merging with intestinal region. Chelipeds long, arched upward, keeled and slightly heterochelous. Walking legs long, P<sub>2</sub> oval, P<sub>3</sub>–P<sub>5</sub> flattened, P<sub>5</sub> smallest with straight dactylus.

*Etymology.*—The generic name *Icriocarcinus* is compounded from the Greek words “Ikriion,” scaffold, bench, or platform, and “Karkinos,” crab; or “platform crab.”

*Comparison.*—The carapace shape, long and slender eyestalks, areolation, transverse ridging, and heterochely typical of the Carcineretidae are well exhibited by this species. The Carcineretidae seems to consist of two natural groups, one with straight, lobed fronts, bilobed rostra, and a similar U-shaped carapace (*Ophthalmoplax* Rathbun 1935; *Woodbinax* Stenzel 1953; and *Carcineretes* Withers 1922) and another with pentagonal or subhexagonal carapaces, spiny or lobed fronts, narrow non-bifurcated rostra, and somewhat similar carapace areolation including more or less developed transverse ridges (*Cancrixantho* Van Straelen 1934; *Longusorbis* Richards 1975; *Icriocarcinus* new genus; and probably *Lithophylax* A. Milne Edwards and Brocchi 1879).

*Icriocarcinus* differs from the first group (*Ophthalmoplax*, *Woodbinax*, and *Carcineretes*) by its pentagonal shape, slanted anterolateral margins, and areolation. *Icriocarcinus* is similar to members of the second group (*Cancrixantho*, *Longusorbis*, and *Lithophylax*) in carapace shape, areolation, possession of a narrow rostrum, and transverse ridging of the carapace. *Icriocarcinus* differs from *Lithophylax* by being much larger, less arched, and by lacking a posterior transverse ridge on the cardiac and mesobranchial regions. *Icriocarcinus* differs from *Cancrixantho* by being proportionally wider; having oblique anterolateral margins; having smaller, better defined anterolateral spines; having its widest point more posterior; lacking the posterior transverse ridge on the epigastric and mesogastric regions; and lacking the three pronounced posterolateral spines of *Cancrixantho*. *Icriocarcinus* is most similar to *Longusorbis* from which it differs by being proportionally wider; having a concave front; a narrower, non-grooved rostrum; having its widest part more posterior; having a less distinctly concave posterior margin; having flat, rather than tumid, tuberculate areolations; having one anterior transverse ridge across the protogastric regions on line with the distal part of the cervical furrow; and having more elongate, upwardly arched, more keeled chelae than *Longusorbis*.

*Icriocarcinus xestos*, new species

Figures 2; 3A–D

*Types.*—Holotype (SDSNH 26038) and paratypes (26040, 26101, 26113, 26202) are deposited in the Paleontology collections of the San Diego Natural History Museum.

*Occurrence, sample size, and preservation.*—Five specimens were collected from the Point Loma Formation at the Carlsbad Research Center (SDSNH Loc. 3162) and are late Campanian or early Maastrichtian in age. The holotype (SDSNH 26038) is a

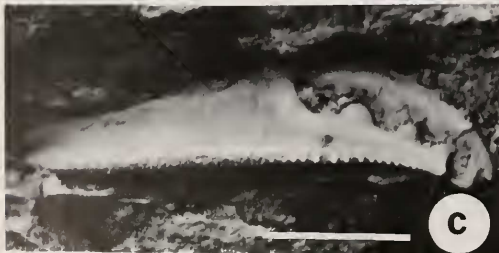
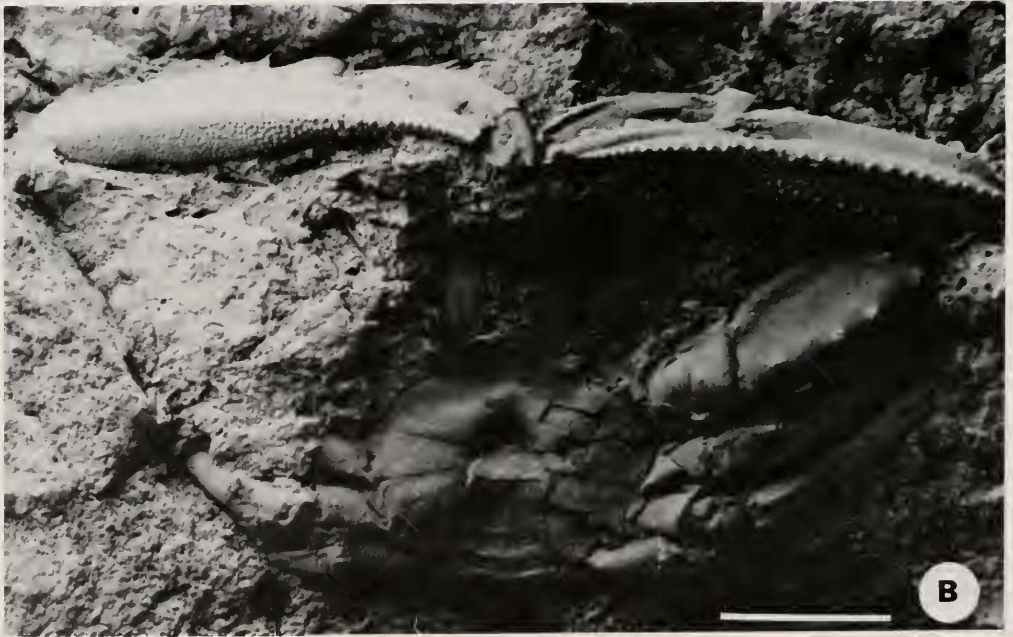
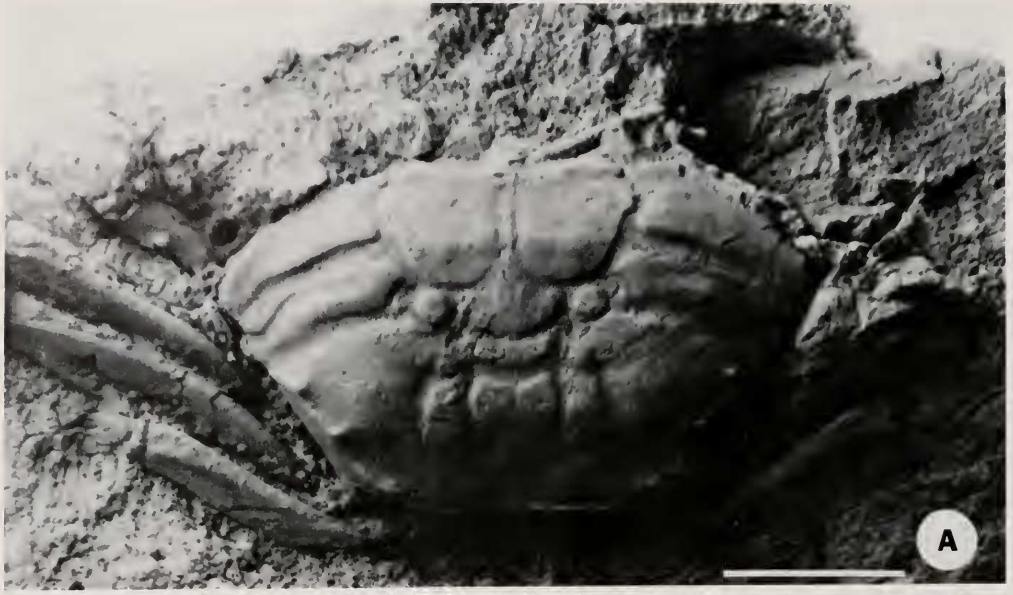


FIGURE 2. *Icriocarcinus xestos*, n. sp. A, holotype, SDSNH 26038, dorsal view of carapace and appendages; B–D, paratype, SDSNH 26202; B, ventral view of sternum, abdomen, and appendages; C, outer face of right claw; D, outer face of left claw. Bar scales = 1 cm.

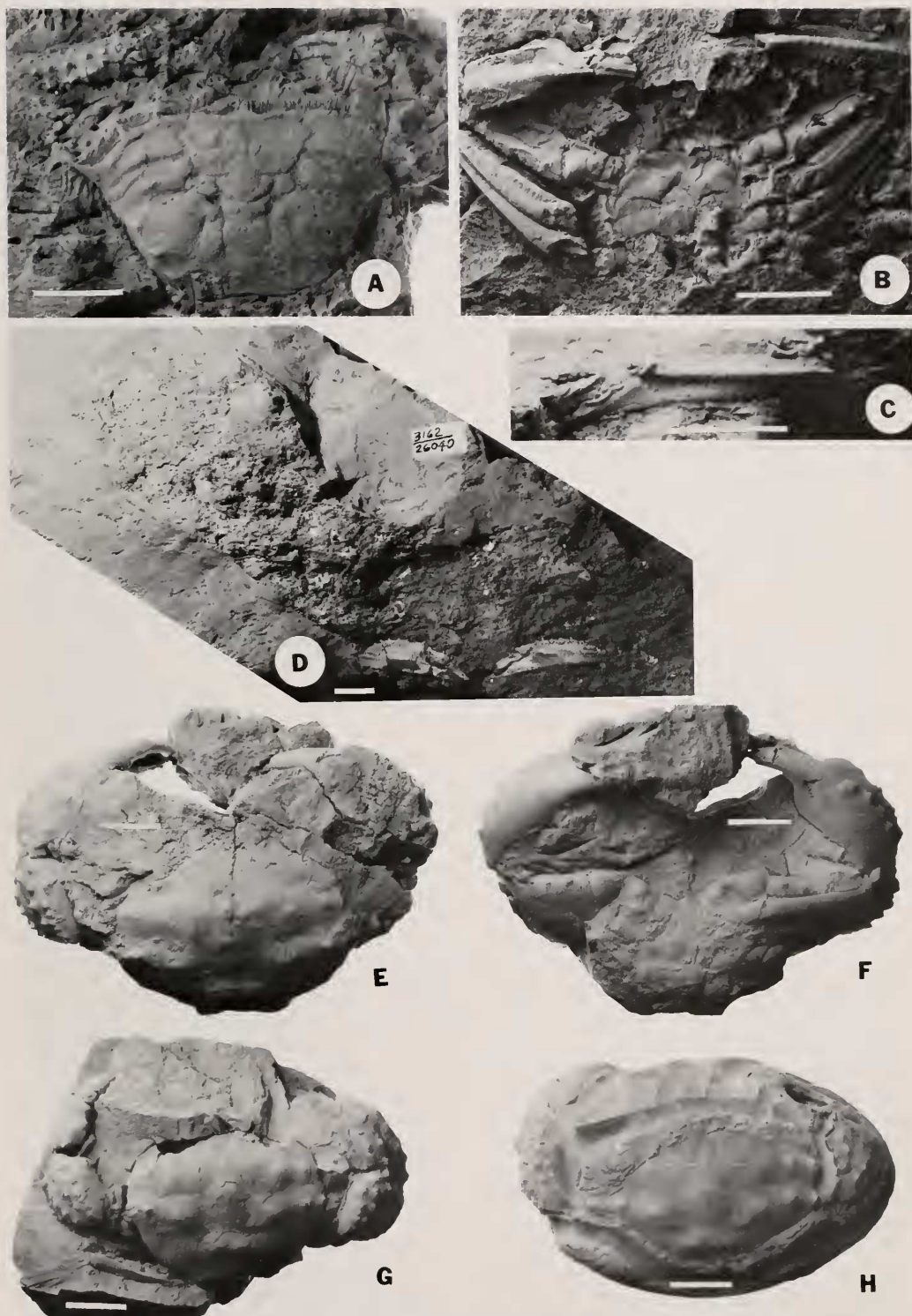


FIGURE 3. A–D, *Icriocarcinus xestos*, n. sp. A, paratype, SDSNH 26113, dorsal view showing anterolateral marginal spines on carapace and spine rows on upper surface of left claw; B, paratype, SDSNH 26101, ventral view; C, holotype, SDSNH 26038, outer face of left claw; D, paratype, SDSNH 26040, specimen preserved at bottom of burrow with claws exposed, burrow in claystone filled with sand and shell fragments. E–H, *Xandaros sternbergi* (Rathbun 1926). E–F, topotype, SDSNH 26036, carapace and venter; G, topotype, SDSNH 26037, carapace, both chelipeds and pereopods; H, hypotype, EH-1, carapace in concretion showing lateral wing. Bar scales = 1 cm.

TABLE 1. Measurements (mm) of *Icriocarcinus xestos*, n. sp.

		Holotype SDSNH 26038	Paratype 1 SDSNH 26101	Paratype 2 SDSNH 26202	Paratype 3 SDSNH 26113	Paratype 4 SDSNH 26040
Carapace						
Length		19.62	—	—	20.5	—
Width		37.13	—	—	36.1+	—
Height		—	—	—	—	—
Orbital Width		(17±)	—	—	18.8±	—
Rostral Width		—	—	—	1.1	—
Abdomen						
A <sub>1</sub>	length	—	—	1.0?	—	—
	width	—	—	—	—	—
A <sub>2</sub>	length	—	—	1.0±	—	—
	width	—	—	—	—	—
A <sub>3</sub>	length	—	—	1.1	—	—
	width	—	—	—	—	—
A <sub>4</sub>	length	—	—	1.5	—	—
	width	—	—	6.9	—	—
A <sub>5</sub>	length	—	—	1.3	—	—
	width	—	—	—	—	—
A <sub>6</sub>	length	—	2.5	4.5	—	—
	width	—	4.5+	—	—	—
T	length	—	2.3	2.5	—	—
	width	—	3.7	5.0	—	—
Chelipeds						
		Left/Right	Left/Right	Left/Right	Left/Right	Left/Right
Coxa	length	—/—	4.0/—	2.4/—	—/—	—/—
	width	—/—	—/—	—/—	—/—	—/—
b/i	length	—/—	5.1/—	4.5/—	—/—	—/—
	width	—/—	—/—	—/—	—/—	—/—
Merus	length	—/—	12.5+/-	14.3+/-	—/—	—/—
	width	—/—	—/—	—/—	—/—	—/—
Carpus	length	9.1/—	—/—	—/—	—/—	—/—
	width	—/—	—/—	—/—	—/—	—/—
Propodus	length	24.0/—	22.6+/-18.3+	28.7/33.3	22.5/26.8	31.5/34.4
	width	—/—	-/5.3	-/7.3±	—/—	7.8/8.7
Dactylus	length	—/—	—/—	-/14.6	-/10.5	-/15.4
	width	—/—	—/—	—/—	—/—	—/—

nearly complete steinkern (Figures 2A, 3C); paratype 2 (SDSNH 26202) preserves the carapace, chelipeds, rostrum and anterolateral spines (Figure 2B–D); paratype 1 (SDSNH 26101, Figure 3B) and paratype 3 (SDSNH 26113, Figure 3A) preserve sterna, abdomens, and pereopods; paratype 4 (SDSNH 26040) is preserved in a shell-hash-filled burrow (Figure 3D). This burrow is oriented oblique to bedding and measures 3.0 to 4.8 cm in diameter and at least 14 cm in length. The fragile, thin exoskeleton was probably preserved on each specimen but exfoliated very rapidly due to mechanical abrasion and humidity changes on all the specimens except paratype 2 (SDSNH 26202).

*Diagnosis.*—Same as for the genus.

*Etymology.*—The trivial name is derived from the Greek word “xestos,” scraped, planed, or smoothed relating to the smooth plateau-like areolations on the carapace.

*Description.*—Carapace pentagonal, ovoid, twice as broad as long (Table 1), slightly arched transversely, arched longitudinally, somewhat depressed in center, well differentiated by grooves. Carapace front broad, sinuous. Rostrum narrow, downturned, ungrooved giving way laterally to broad orbital regions (50% of carapace width). Anterolateral margins broadly rounded with three spines, one at outer angle of orbit?, one at midpoint, and the largest forming anterolateral corner and widest part of carapace 1/3 distance from front. Posterolateral margins straight, sharply reflexed into a near vertical surface; posterolateral angle rounded; posterior margin slightly raised into rim

and concave. Carapace grooves narrow, separating well delineated, plateau-like areola-tions. Cephalic arch well differentiated; gastric region well differentiated, depressed somewhat at center; mesogastric broadly ovoid, rounding rapidly onto very narrow anterior tongue terminating before reaching rostrum. Protogastric lobes divided by a distinct transverse line of flexure, forming a ridge near posterior  $\frac{1}{3}$  (on line with cervical groove) of the mesogastric region. Urogastric region transverse, convex posteriorly. Hepatic regions transversely wide, longitudinally narrow, forming anterolateral margin of carapace with its three marginal spines. Scapular arch moderately differentiated, especially medially. Cardiac region raised into a bilobed level plateau anteriorly, gradually decreasing in relief posteriorly, merging indistinguishably into the intestinal region. Branchial regions differentiated into well-delimited epibranchial regions and posterior meso-metabran- chial regions which are broadly swollen with three short marginal ridges; one near front, the second at midpoint, and the third near posterolateral angle. These ridges arise as small tubercles on the lateral margin of the edge of the dorsal shield, become raised and transverse before becoming obsolete. Anterior edge of epibranchial subdivided distally by a small, subparallel auxiliary groove posterior to the cervical groove giving rise to a distinctive, short, distal, transverse anterior epibranchial ridge. Two subparallel lines of muscle insertions are present, one posterior to distal cervical groove and one subparallel to groove between epibranchial and mesobran- chial. [The terms cephalic arch and scapular arch as used herein follow the terminology of H. Milne Edwards (1834–40) and Bell (1858). These authors distinguished the anterior portion of the carapace (cephalic arch) consisting of the frontal, orbital, gastric, and hepatic regions from the posterior portion (scapular arch) formed by the branchial and cardiac regions.]

Carapace evenly covered by dense, fine granulation arranged in patterns of lines forming swirls. Exoskeleton exceedingly thin over the entire crab. Sternum transversely ovoid, relatively flat. Anterior somites fused (1–4) with slight transverse flexure, divided into anterior shelf and posterior sternal “plane” at same level as other somites; somites 5–7 wedge-shaped, widest distally; posterior portion of somite 5 forms widest part of sternum; somite 6 narrower than 5 but with longer distal edge; somite 7 narrower than 6 and shorter; somite 8 barely visible beneath abdominal flap. Abdomen with at least six segments, the penultimate being longest and those proximal being about the same size and much shorter than either of last two segments; last three segments on males about same width ( $\frac{1}{3}$  of sternal width), the more proximal are wider ( $\frac{2}{3}$  of sternal width and very narrow). Eyestalk long and slim, apparently folding back into long orbit extending beneath front from rostrum to first anterolateral spine. Maxillipeds spatulate, endognath slightly narrower than exognath, perhaps twice as long as wide; endognath serrate on medial edge; proximal end of endognath curved beneath exognath. Chelipeds heterochelous, long, arched upward in middle, more or less keeled, granulate between keels, granules becoming larger and tending toward small spines on keels. Right claw slightly larger than left, less well keeled, possessing three large button-like teeth on the fixed finger, teeth are capped by dense enamel-like material. Left claw slightly smaller, more keeled, possessing shearing teeth on fixed finger. Upper surface of right propodus has three rows of spines; an inner row of four, a middle row of 7?, and an outer row of 7. Meri of both claws have two anterior and four posterior downward facing, and three or four forward facing, spines. Carpals have three or four longitudinal spine rows, small spines on upper surfaces and one large forward facing spine in proximal anterior row. Dactyli closely opposed to fixed fingers, similarly toothed, having an anterior row of at least five spines and one proximal posterior spine on upper surfaces. Walking legs long and flattened;  $P_2$  present only on the holotype, is largest and almost round;  $P_3$  and  $P_4$  are very flat, similar in size, smaller than  $P_2$ , larger than  $P_5$ , which is also very flat and has a merus nearly as long as its broad carpus and propodus, and narrow dactylus.

*Comparison.*—*Icriocarcinus xestos* is the only species in the genus and is unlikely to be confused with any other fossil carcineretid crabs as discussed in the generic comparisons. *Icriocarcinus xestos* is most similar to *Longusorbis cuniculosus* Richards (1975) although it differs in many significant ways: by being proportionally wider; by

having a concave front; by having a non-grooved, narrower rostrum, having its widest point further back; by having a straighter hind margin; by having flat areolations; by having an anterior transverse ridge near the posterior of the protogastric regions; and by having more elongate upwardly arched, keeled chelae.

*Remarks.*—During preparation, the exceedingly thin and fragile exoskeleton was observed over the carapace. This exoskeleton is covered by swirling patterns of fine granules and setal pits. It is thicker on the chelae but thinner over the other pereopods. The thin exoskeleton is consistent with a burrowing mode of life as evidenced by paratype 4 (26040). *Longusorbis cuniculosis* Richards (1975) is also a burrowing form.

Superfamily Xanthoidea Dana 1851

Family Xanthidae Dana 1851

*Xandaros*, new genus

*Type species.*—*Zanthopsis sternbergi* Rathbun 1926.

*Diagnosis.*—Carapace slightly wider than long, transversely oval, widest at anterior third, moderately differentiated by grooves, arched longitudinally. Rostrum short, downturned, sulcate and bifid. Anterolateral margins tightly rounded; orbits large. Posterolateral margins broadly rounded; posterior margin narrow, concave, slightly upturned. Carapace transversely ridged with a gastric ridge, an epibranchial ridge, and a mesobranchial ridge, each surmounted by low bosses. Gastric ridge with four small anterior bosses in diamond shape on anterior tongue of mesogastric and epigastric regions, a large boss at posterior portion of mesogastric region, and two transversely elongate bosses across cardiac region. Abdomen large, somites increasing in length posteriorly. Chelipeds massive, equal; merus, carpus, and propodus tuberculate; claws strongly convex with five longitudinal rows of tubercles; fingers spatulate at tips.

*Etymology.*—A massively armored crab armed with huge claws; hence its name, “Xandaros,” Greek, meaning fabulous sea monster.

*Comparison.*—*Xandaros* exhibits the transversely oval carapace, well-developed orbits, dentate anterolateral margins, and ambulatory fifth pereopods of the Xanthidae (Glaessner 1969:R515). *Xandaros* is most similar to the Brazilian late Cretaceous genus *Palaeoxanthopsis* Beurlen 1958 in having a convex anterior margin, large orbits, and transverse rows of bosses on the carapace. *Xandaros* differs from *Palaeoxanthopsis* by lacking the prominent posterolateral spines, being relatively shorter in relation to width, and lacking carinate claws. *Xandaros* is much larger and more robust than *Xanthilites* Bell 1858 and lacks the prominent anterolateral teeth, small, covered orbits, and smooth claws of *Xanthilites*. *Xandaros* is much larger, much more robust, much more convex, and much more areolated than the North American late Cretaceous genus *Xanthias* Rathbun 1897. *Xandaros* somewhat resembles the genera *Syphax* A. Milne Edwards 1864 and *Titanocarcinus* A. Milne Edwards 1864 in carapace shape, possession of large orbits, convexity, and degree of carapace areolation; but differs from them by being relatively broader, having carapace bosses arranged in transverse rows, and having significantly different patterns of carapace areolation. *Xandaros* superficially resembles *Zanthopsis* McCoy 1849 in carapace outline and carapace bosses; but differs greatly in areolation, possession of transversely aligned, rather than longitudinally aligned bosses, lack of fusion of abdominal somites 3–5 (seen in *Zanthopsis*; Glaessner 1969:R522), and possession of a “greater number and different disposition of tubercles . . .” on the claws (Rathbun 1926).

*Xandaros sternbergi* (Rathbun 1926)

Figures 3E–H; 4

*Zanthopsis sternbergi* Rathbun 1926, p. 54, Pl. 39, figs. 1–4.

Decapoda indeterminant; Sundberg and Riney 1984, p. 105, figs. 3, 9.

*Zanthopsis sternbergi* Rathbun; Bishop 1986b, p. 128, fig. 10a, b.





FIGURE 4. *Xandaros sternbergi* (Rathbun 1926). A, topotype, SDSNH 26035, anterior view of carapace and right claw; B, topotype, SDSNH 26034, outer face of left claw; C, topotype, SDSNH 26035, dorsal view of carapace and right cheliped; D, topotype, SDSNH 26033, ventral view of sternum, abdomen, cheliped, and pereopods; E, hypotype, EH-2, anterior view of whole crab mostly encased in calcareous concretion (note spatulate finger occlusion); F, topotype, SDSNH 26036, left oblique view of cheliped and carapace. Bar scales = 1 cm.

*Types.*—The holotype (USNM 73390) and six specimens from the San Diego Natural History Museum are apparently from the same general area, making the SDSNH specimens topotypes. Thomas Deméré (personal communication, 22 March 1985) has stated “The locality description in Rathbun (1926:21, 54) is slightly in error as it states that Kelly’s Ranch is 5 miles north of Carlsbad Station. In reality, the ranch was located east of Carlsbad. Cretaceous strata are exposed in only a small ‘window’ at the eastern border of the old ranch, and I am certain that the holotype of *Zanthopsis sternbergi* is from the same section as that recently exposed by grading at the Carlsbad Research Center.”

*Occurrence, sample size, and preservation.*—Ten specimens of *Xandaros sternbergi* are known from two localities, seven from the type area and three from Punta San Jose, Baja California (Bishop, 1986a). The type locality is cited (Rathbun 1926) as “California: Kelly’s Ranch, 5 miles north (sic) of Carlsbad Station, Santa Fe Railway, San Diego County. . . .” A second suite of specimens was collected from the site of the Carlsbad Research Center (SDSNH Loc. 3162) in claystones of the Point Loma Formation (Sundberg and Riney 1984).

*Description.*—Carapace oval; width twice length, widest at midpoint across epibranchial regions (Table 2); strongly arched longitudinally; slightly arched transversely. Orbitofrontal margin large (65% of carapace width), arcuate, with a large outer fossa and a poorly defined inner, antennal fossa; upper margin upturned with a sulcus at intraorbital septum. Rostrum short, downturned, sulcate and bifid. Anterolateral margins tightly rounded to widest point at epibranchial lobes; posterolateral margins relatively straighter, slightly sinuous; posterior margin distinctly concave, slightly upturned into a shelf. Carapace furrows poorly defined by broad depressions. Cervical depression transverse, sinuous, terminating on gastric ridge in subtle pits. A posterior depression, subparallel to cervical depression, lies between the epibranchial–urogastric and mesobranchial–cardiac regions. Longitudinal grooves even more subtle; those bounding gastric ridge poorly defined anteriorly, better defined posteriorly around posterior of mesogastric, urogastric, and cardiac–intestinal regions. Groove between protogastric and hepatic regions obsolete.

Carapace differentiated into more or less tumid regions. Cephalic arch dominated by discontinuous transverse ridge surmounted by a row of nine bosses; a central mesogastric boss on posterior of anterior tongue of mesogastric region; two on protogastric region; and two on hepatic region, these becoming more pronounced from proximal protogastric boss to distal hepatic boss. Mesogastric region with large posterior boss, and smaller but pronounced medial bosses at the posterior and anterior ends of the anterior prolongation which with small epigastric bosses form a diamond-shape. The margin of the orbit rises from the sulcate, bifid rostrum forming prominent orbital concavities in the anterolateral margin. Scapular arch dominated by sagittal, epigastric, and mesogastric ridges. Sagittal ridge with depressed urogastric region and raised cardiac region often surmounted by two low, adjacent, transversely elongated bosses. Epigastric ridge with prominent proximal boss and two smaller but more pronounced bosses, the distal one being extended into a long lateral spine. The epigastric ridge is interrupted by the depressed urogastric region. A second transverse scapular ridge lies on line with the two transverse cardiac bosses, marked by a gentle swelling on the mesobranchial regions. Metabranchial and intestinal regions form a low, raised shelf along concave posterior margin. Carapace ornamented by gentle unevenness, subtle bosses, and very fine punctation.

Female abdomen broad, barely grooved longitudinally, oval; somites progressively longer from  $Ab_1$  to  $Ab_4$ , widths increase to  $Ab_3$ , then decrease to telson; segments  $Ab_3$  to  $Ab_5$  with paired groups of setal pits (consisting of three pits each) near posteriors. Male abdomen narrower, segments more nearly similar to one another. Pereiopods variable;  $P_1$  very large, massively chelate;  $P_2$ – $P_5$  progressively smaller, oval in cross section. Telson of female broadly subovate in contrast to triangular telson of male.

Chelipeds very large, massive, and tuberculate, subequal, right somewhat larger. Merus long, armed with about five ventral tubercles. Carpus equant, longitudinally



grooved, tuberculate; four? longitudinal rows of tubercles, the uppermost row with six small tubercles on edge of flattened crest, second row with four larger tubercles and a single distal tubercle lies above the longitudinal groove; two rows of tubercles each lie below the longitudinal groove which runs from the upper distal articulation to the proximal articulation. Distal outer edge bordered by a furrow. Propodus longitudinally convex, strongly convex transversely on outer face. Palm longer than high, covered by five longitudinal rows of tubercles, the uppermost runs along the upper margin of the claw, the second subparallel to the upper margin with tubercles, the third with four tubercles, and the fourth with five tubercles form a "V" diverging distally from a common tubercle; the fifth row runs parallel to the lower margin. The fixed fingers are slim, extended horizontally, and spatulate at tips; left somewhat blunter than right. The movable fingers are slim, curved and spatulate, with a row of 13 setal pits from upper articulation to stepped-down tip.

*Comparison.* — Although *Xandaros sternbergi* resembles many other xanthid crabs in a general way, few species are similar enough to cause confusion. *Xandaros sternbergi* is perhaps most similar to *Palaeoxanthopsis cretacea* (Rathbun 1902) from the Maastriichtian of Brazil, but differs from it by lacking the large, prominent posterolateral spines, by being relatively shorter, by having three medial mesogastric bosses rather than one, by having its posterior medial mesogastric tubercle and the posterior part of the mesogastric region more anteriorly placed, by its transverse epigastric ridges with a row of three bosses, by its transversely bilobed cardiac region, and by its lack of "carinate" chelae. *Xandaros sternbergi* can easily be distinguished from *Syphax crassus* A. Milne Edwards 1864, *Titanocarcinus serratifrons* A. Milne Edwards 1863, and *Xanthilites bowerbanki* Bell 1858 by differences in carapace shape, areolation, and surface ornamentation. *Xandaros sternbergi* is easily distinguished from *Zanthopsis hendersonianus* Rathbun 1926 from the Oligocene of California and *Zanthopsis vulgaris* Rathbun 1926 from the Oligocene of the northwestern U.S. and southwestern Canada.

#### SIGNIFICANCE

The two taxa described enhance our still limited knowledge of Pacific Slope Cretaceous decapods. *Xandaros sternbergi* is now much better known with the description of its body and its assignment to a new genus. *Icriocarcinus xestos* not only represents a new taxon from the Pacific Slope but provides important insights into the possible origin of some trace fossils in the Cretaceous. Both taxa are now relatively well known species because of the large collections available and the completeness of the specimens. The addition of the Baja California collection enlarges the paleobiogeographic distribution of *Xandaros sternbergi*.

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